

# UNITED STATES PATENT OFFICE.

EDWARD H. ELLIS, OF SOMERVILLE, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO EDWARD H. ELLIS AND ALFRED D. CHANDLER, BOTH OF BROOKLINE, MASSACHUSETTS, TRUSTEES OF THE ELLIS BRIQUET BINDER.

FUEL-BRIQUET AND METHOD OF MAKING SAME.

990,348.

Specification of Letters Patent.

Patented Apr. 25, 1911.

No Drawing.

Application filed July 5, 1910. Serial No. 570,498.

*To all whom it may concern:*

Be it known that I, EDWARD H. ELLIS, of Somerville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Fuel-Briquets and Method of Making the Same, of which the following is a specification.

This invention relates to a new and useful briquet as an article of manufacture, and to the particular application of the process for making such new and useful briquet.

Heretofore the best briquets have been made with binders of coal tar pitch, or of silicates, and of oil, but the smoke and the odor from such binders have impaired their usefulness and sale.

This invention provides a fuel briquet free from the aforesaid objections, and which is cohesive, waterproof, odorless, smokeless, retains its form in the fire, has a high calorific efficiency, and is comparatively inexpensive to manufacture.

In carrying out my invention, I first produce a composition containing sulfuric acid, borax, molasses and water or their reaction products. This composition is then incorporated with comminuted fuel and the composition is then mechanically pressed into the form of briquets; the briquets are then subjected to calorific action of a certain temperature through the medium of a specially designed and regulated oven.

The composition may be in the proportion of one-half ( $\frac{1}{2}$ ) ounce of sulfuric acid, one (1) ounce of borax, one and three-quarters ( $1\frac{3}{4}$ ) ounces of molasses and one (1) pint of water, this total quantity of composition being then used in the proportion of two hundred (200) pounds of composition to one (1) ton of comminuted fuel. I do not, however, limit myself to these specific proportions.

When the composition and fuel have been thoroughly incorporated by suitable machinery, the briquets are made into any desired form, preferably under such a pressure as the graded requirements of combustion demand. The briquets are then subjected to a process of final elimination of moisture, and simultaneously to a process of induration and waterproofing, through the added binding operation of caloric upon

the chemical ingredients employed in the composition, these effects being produced by a suitably arranged oven kept at a temperature of about 350° F., and through which the passage of the briquets is regulated for from about ten (10) to about twenty (20) minutes, the degree of the heat and the duration of the transit in the oven being governed by the kind of service for which the briquets are intended.

I have found in practice that such briquets are not only hard enough to bear transportation and handling, but that they are also waterproof, and are odorless and smokeless during combustion. Also, that they possess a high calorific efficiency and preserve their form in the fire, the outer portion during combustion presenting of course some ash, which, however, is crowded off, but leaving the inner and unconsumed portions still hard enough to sustain the weight of fresh fuel above, and to preserve their form during "slicing" of the fire.

One of the reasons why my improved briquets are economical to manufacture is that the inexpensive chemicals specified so combine as to reduce to the minimum the time and degree of heat applied to render them hard and waterproof.

Comminuted bituminous or soft coal made into briquets with my improved composition and treatment, is as hard as anthracite coal, and burns without the annoying smoke nuisance usually resulting from the use of soft coal. Briquets manufactured under my invention have the equivalent weight value of hard coal, but without cinder loss because of the complete combustion of the briquets.

I claim:—

1. A briquet manufactured of comminuted fuel and a composition including the reaction products of sulfuric acid, borax and molasses.

2. A briquet manufactured of comminuted fuel mixed with a composition containing the reaction products of sulfuric acid, borax, molasses and water, the said fuel and composition being mixed, shaped and baked.

3. A briquet manufactured of comminuted fuel, and the reaction products of sulfuric acid, borax and molasses rendered hard and waterproof by heat.

4. The method of making fuel briquets,

consisting in mixing with comminuted fuel  
a composition containing the reaction prod-  
ucts of sulfuric acid, borax, molasses and  
water, forming the mixture into briquets  
5 under pressure, and then subjecting the  
briquets to the action of heat to render them  
hard and waterproof.

In testimony whereof I have affixed my  
signature, in presence of two witnesses.

EDWARD H. ELLIS.

Witnesses:

E. BATCHELDER,  
P. W. PEZZETTI.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,  
Washington, D. C."

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It is hereby certified that in Letters Patent No. 990,348, granted April 25, 1911, upon the application of Edward H. Ellis, of Somerville, Massachusetts, for an improvement in "Fuel-Briquets and Methods of Making Same," an error appears requiring correction as follows: In the grant and in the printed heading it is stated that the inventor, said Ellis, assigned, by mesne assignments, his right to "Edward H. Ellis and Alfred D. Chandler, both of Brookline, Massachusetts," whereas it should have been stated that he assigned, by mesne assignments, his right to *himself and Alfred D. Chandler, of Brookline, Massachusetts*, as shown by the record of assignments in this office; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 23d day of May, A. D., 1911.

[SEAL.]

C. C. BILLINGS,  
*Acting Commissioner of Patents.*